DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

Bay Area Branch
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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-004756
Date Inspected: 09-Nov-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 1400
OSM Departure Time: 2300
Location: Shanghai China

CWI Name: Zhu Zhong Hai

Inspected CWI report:	☑ Yes	☐ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: Tower

Summary of Items Observed:

89M mock up

Caltrans QA Inspector observed that ZPMC was performing the welding for weld trials of the 89M mock up. The weld trials consisted of fit-lug to diaphragm and fit-lug to stiffener plates at 3 horizontal stiffener locations. The welds were identified as Fit-lug to diaphragm MUB-MA21-G/J-34 and 66, fit lug to stiffener welds were MUB-MA21-G/J- 30, 68, 27 and 67. The above welds were welded previously in the day except for welds MUB-MA21-G/J-30 and 68 which was observed by this QA Inspector. During the observation it was noted that ZPMC was using a 370 X 30 X 75mm fit lug at welds MUB-MA21-G/J-30 and 68 that ZPMC had used a small 10mm bevel for the root pass only on. The welding process at these locations was Flux Core Arc Welding (FCAW) under WPS-B-T-2333-TC-P4-F performed by two (2) ZPMC welders identified as #054460 and #062259 the position welding in was vertical up progression. The average welding parameters recorded was pre-heat 189, 214 amps, 24 volts and a travel speed of 115 mm/min. ZPMC was using Supercored 71H, 1.4mm diameter electrode for the stiffener to fit-lug fillet weld. The remaining weld joints were welded on the previous shift and the information below was received from ZPMC and ABF QC personnel.

ZPMC had used the Shielded Metal Arc welding (SMAW) process under 2 welding procedures identified as WPS-B-T-4113-2 and WPS-B-P-2113. The welding electrode used for these locations was the high nickel rod identified under ABF's new weld trial procedure ABF-WPS-D15-F1202A as E7018 C3L H4R, 3.2mm electrode in the vertical up progression. The weld joints were MUB-MA21-G/J-34 and 66 performed by two (2) ZPMC welders identified as #053753 and #048617 the position they had welded in was vertical up progression. The average welding parameters recorded was; pre-heat 194, 115 amps, 24 volts and a travel speed of 104 mm/min. These weld joints were for the diaphragm to fit-lug fillet weld.

ZPMC had used the Flux Core Arc Welding (FCAW) process under welding procedure identified as

WPS-B-T-2333-TC-P4-F. The welding electrode used for these locations was the Supercored 71H, 1.4mm diameter electrode vertical up progression. The weld joints were MUB-MA21-G/J-27 and 67 performed by two (2) ZPMC welders identified as #054460 and #04467. The average welding parameters recorded was; pre-heat 194, 115 amps, 24 volts and a travel speed of 104 mm/min. These weld joints were for the stiffener to fit-lug PJP welds.

The starting time and temperatures for the controlled cool down on both MUB-MA21-G/J-30 and 68, started at 1200 hrs with a starting temperature of 198ºc the ambient temperature was approximately 27ºc. Below are the details of the controlled cool down.

2000 hrs – 206ºc (Start of cool down)
2030 hrs – 190ºc
2100 hrs – 173ºc (33ºc drop in 1 hour)
The controlled cool down was still in process by the end of this QA inspectors scheduled shift.

The starting time and temperatures for the controlled cool down on both MUB-MA21-G/J-27 and 67, started at 1200 hrs with a starting temperature of 198ºc the ambient temperature was approximately 25-28ºc. Below are the details of the controlled cool down.

1030 hrs – 216ºc (Start of cool down)
1100 hrs – 208ºc
1130 hrs – 190ºc (26ºc drop in 1 hour)
1200 hrs – 170ºc
1230 hrs – 160ºc (30ºc drop in 1 hour)
1300 hrs – 142ºc
1330 hrs – 125ºc (35ºc drop in 1 hour)
1400 hrs – 110ºc
1430 hrs – 94ºc (31ºc drop in 1 hour)
1500 hrs – 82ºc
1530 hrs – 67ºc (27ºc drop in 1 hour)
1600 hrs – 53ºc
1630 hrs – 45ºc (22ºc drop in 1 hour)
1700 hrs – 29ºc
1730 hrs – 21ºc (24ºc drop in 1 hour)
1800 hrs – 17ºc

The controlled cool down appears to be within the requirements of the submitted procedure by ABF.

The starting time and temperatures for the controlled cool down on both MUB-MA21-G/J-33 and 66, started at 1200 hrs with a starting temperature of 198ºc the ambient temperature was approximately 25 - 28ºc. Below are the details of the controlled cool down.

1100 hrs – 205ºc (Start of cool down)
1130 hrs – 186ºc
1200 hrs – 173ºc (32ºc drop in 1 hour)
1230 hrs – 152ºc
1300 hrs – 136ºc (37ºc drop in 1 hour)
1330 hrs – 120ºc
1400 hrs – 106ºc (30ºc drop in 1 hour)
1430 hrs – 95ºc
1500 hrs – 80ºc (26ºc drop in 1 hour)
1530 hrs – 70ºc
1600 hrs – 52ºc (28ºc drop in 1 hour)
1630 hrs – 45ºc
1700 hrs – 27ºc (25ºc drop in 1 hour)
1730 hrs – 21ºc
1800 hrs – 17ºc (10ºc drop in 1 hour)

The controlled cool down appears to be within the requirements of the submitted procedure by ABF.

Tower Shop Bay 3 Deck Panel repairs

The QA Inspector randomly observed ZPMC personnel performing grinding of repairs for the Orthotropic Box Girder (OBG) deck panel Partial Joint Penetration (PJP) welds. This QA inspector along with ZPMC and ABF personnel performed the 3 party initial and final visual inspections. All 3 parties agreed on the areas and signed the yellow ABF tracking tag affixed to the deck panel. The deck panels inspected were initial inspection DP225-001 and final inspection for DP436-001, DP328-002 and DP567-001 Certified Welding Inspector for ZPMC Li Yun Hua was present at this location for the monitoring of the deck repairs and inspection. Also noted in bay 3 to monitor deck panel repairs were ABF personnel Ding Bao Hua.

WELDING INSPECTION REPORT

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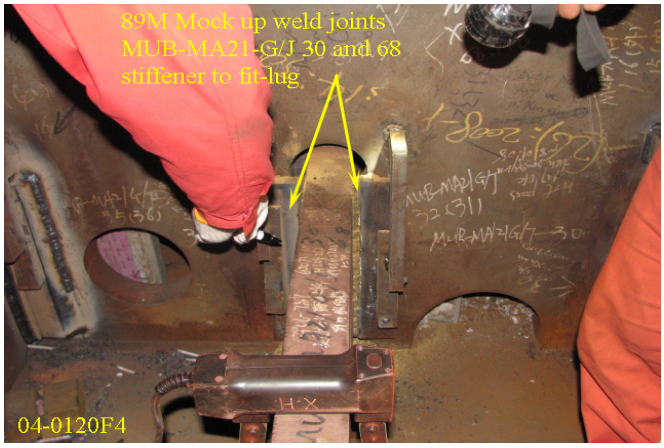

Summary of Conversations:

As noted above.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Josh Ishibashi, 1-376-471-0411, who represents the Office of Structural Materials for your project.

Inspected By:	Riley,Ken	Quality Assurance Inspector
Reviewed By:	Carreon,Albert	QA Reviewer